SEQUENCE LISTING

<110> Brookhaven Science Associates
Shanklin, John

<120> Mutant Fatty Acid Desaturase and Methods for Directed Mutagenesis

<130> CIP of 09/328,550 filed June 9, 1999; which was a CIP of 09/233,856 filed January 19, 1999

<150> 09/328,550
<151> 1999-06-09

<160> 13

<170> PatentIn version 3.1

<210> 1
<211> 363
<212> PRT
<213> Ricinus communis

<220>
<221> misc_feature
<223> ricinus communis delta 9 18:0 Acyl ACP Desaturase

<400> 1

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Ala Ser Thr Leu Lys Ser Gly Ser Lys Glu Val Glu Asn Leu Lys Lys
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Pro Phe Met Pro Pro Arg Glu Val His Val Gln Val Thr His Ser Met
            20                  25                  30

Pro Pro Gln Lys Ile Glu Ile Phe Lys Ser Leu Asp Asn Trp Ala Glu
        35                  40                  45

Glu Asn Ile Leu Val His Leu Lys Pro Val Glu Lys Cys Trp Gln Pro
    50                  55                  60

Gln Asp Phe Leu Pro Asp Pro Ala Ser Asp Gly Phe Asp Glu Gln Val
65                  70                  75                  80

Arg Glu Leu Arg Glu Arg Ala Lys Glu Ile Pro Asp Asp Tyr Phe Val
                85                  90                  95

Val Leu Val Gly Asp Met Ile Thr Glu Glu Ala Leu Pro Thr Tyr Gln
            100                 105                 110
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Thr Met Leu Asn Thr Leu Asp Gly Val Arg Asp Glu Thr Gly Ala Ser
115 120 125

Pro Thr Ser Trp Ala Ile Trp Thr Arg Ala Trp Thr Ala Glu Glu Asn
130 135 140

Arg His Gly Asp Leu Leu Asn Lys Tyr Leu Tyr Leu Ser Gly Arg Val
145 150 155 160

Asp Met Arg Gln Ile Glu Lys Thr Ile Gln Tyr Leu Ile Gly Ser Gly
165 170 175

Met Asp Pro Arg Thr Glu Asn Ser Pro Tyr Leu Gly Phe Ile Tyr Thr
180 185 190

Ser Phe Gln Glu Arg Ala Thr Phe Ile Ser His Gly Asn Thr Ala Arg
195 200 205

Gln Ala Lys Glu His Gly Asp Ile Lys Leu Ala Gln Ile Cys Gly Thr
210 215 220

Ile Ala Ala Asp Glu Lys Arg His Glu Thr Ala Tyr Thr Lys Ile Val
225 230 235 240

Glu Lys Leu Phe Glu Ile Asp Pro Asp Gly Thr Val Leu Ala Phe Ala
245 250 255

Asp Met Met Arg Lys Lys Ile Ser Met Pro Ala His Leu Met Tyr Asp
260 265 270

Gly Arg Asp Asp Asn Leu Phe Asp His Phe Ser Ala Val Ala Gln Arg
275 280 285

Leu Gly Val Tyr Thr Ala Lys Asp Tyr Ala Asp Ile Leu Glu Phe Leu
290 295 300

Val Gly Arg Trp Lys Val Asp Lys Leu Thr Gly Leu Ser Ala Glu Gly
305 310 315 320

Gln Lys Ala Gln Asp Tyr Val Cys Arg Leu Pro Pro Arg Ile Arg Arg
325 330 335

Leu Glu Glu Arg Ala Gln Gly Arg Ala Lys Glu Ala Pro Thr Met Pro

340 345 350

Phe Ser Trp Ile Phe Asp Arg Gln Val Lys Leu
355 360

<210> 2
<211> 1092
<212> DNA
<213> Ricinus communis

<220>
<221> misc_feature
<223> residues 138 to 1239 of open reading frame

<400> 2
gcctctaccc tcaagtctgg ttctaaggaa gttgagaatc tcaagaagcc tttcatgcct 60

cctcgggagg tacatgttca ggttacccat tctatgccac cccaaaagat tgagatcttt 120

aaatccctag acaattgggc tgaggagaac attctggttc atctgaagcc agttgagaaa 180

tgttggcaac cgcaggattt tttgccagat cccgcctctg atggatttga tgagcaagtc 240

agggaactca gggagagagc aaaggagatt cctgatgatt attttgttgt tttggttgga 300

gacatgataa cggaagaagc ccttcccact tatcaaacaa tgctgaatac cttggatgga 360

gttcgggatg aaacaggtgc aagtcctact tcttgggcaa tttggacaag ggcatggact 420

gcggaagaga atagacatgg tgacctcctc aataagtatc tctacctatc tggacgagtg 480

gacatgaggc aaattgagaa gacaattcaa tatttgattg gttcaggaat ggatccacgg 540

acagaaaaca gtccatacct tgggttcatc tatacatcat tccaggaaag ggcaaccttc 600

atttctcatg ggaacactgc ccgacaagcc aaagagcatg gagacataaa gttggctcaa 660

atatgtggta caattgctgc agatgagaag cgccatgaga cagcctacac aaagatagtg 720

gaaaaactct ttgagattga tcctgatgga actgttttgg cttttgctga tatgatgaga 780

aagaaaattt ctatgcctgc acacttgatg tatgatggcc gagatgataa tcttttttgac 840

cacttttcag ctgttgcgca gcgtcttgga gtctacacag caaaggatta tgcagatata 900

ttggagttct tggtgggcag atggaaggtg gataaactaa cgggcctttc agctgaggga 960

caaaaggctc aggactatgt ttgtcggtta cctccaagaa ttagaaggct ggaagagaga 1020

gctcaaggaa gggcaaagga agcacccacc atgcctttca gctggatttt cgataggcaa 1080

gtgaagctgt ag 1092

<210> 3
<211> 34
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<223> PCR primer; sequence flanking unique XbaI site at the 5' end of t
he open reading frame

<400> 3
gtgagcggat aacaatttca cacagtctag aaat 34

<210> 4
<211> 72
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<222> (56)..(57)
<223> PCR primer is a degenerate oligonucleotide in which "n" indicates
the presence of either C, A, T or G at that nucleotide position

<400> 4
ccaaattgcc caagacgtcg gacttgcacc tgtttcatcc cgaactccat ccaamnnatt 60

cagcattgtt tg 72

<210> 5
<211> 31
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<223> PCR primer

<400> 5
gaaacaggtg caagtccgac gtcttgggca a 31

<210> 6
<211> 26
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<223> PCR primer

<400> 6
gttttctgtc cgcggatcca ttcctg 26

<210> 7
<211> 34
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<223> PCR primer

<400> 7
gtgagcggat aacaatttca cacagtctag aaat 34

<210> 8
<211> 30
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<223> PCR primer

<400> 8
cacgaggccc tttcgtcttc aagaattctc 30

<210> 9
<211> 28
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<223> PCR primer

<400> 9
ttgataagtg ggaagggctt cttccgtt 28

<210> 10
<211> 66
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<222> (41)..(43)
<223> PCR primer is a degenerate oligonucleotide in which "n" indicates the presence of either C, A, T or G and in which "k" indicates the presence of either T or G.

<220>
<221> misc_feature
<222> (32)..(34)
<223> PCR primer is degenerate olignucleotide in which "n" indicates th
e presence of either C, A T, or G at that nucleotide position and
in which "k" indicates either T or G

<220>
<221> misc_feature
<222> (44)..(46)
<223> PCR primer is a degenerate oligonucleotide in which "n" indicates
the presence of either C, A, T, or G at that nucleotide position
and in which "k" indicates the presence of either T or G.

<400> 10
aacggaagaa gcccttccca cttatcaaac annkctgaat nnknnkgatg gagttcggga 60

tgaaac 66

<210> 11
<211> 26
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<223> PCR primer

<400> 11
tccattcctg aaccaatcaa atattg 26

<210> 12
<211> 70
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<222> (22)..(24)
<223> PCR primer in a degenerate oligonucleotide in which "n" indicates
the presence of either C, A, T or G at that nucleotide position
and in which "k" indicates the presence of either T or G at that
nucleotide position.

<220>
<221> misc_feature
<222> (28)..(30)
<223> PCR primer in a degenerate oligonucleotide in which "n" indicates
the presence of either C, A, T or G at that nucleotide position

and in which "k" indicates the presence of either T or G at that nucleotide position.

<220>
<221> misc_feature
<222> (49)..(51)
<223> PCR primer in a degenerate oligonucleotide in which "n" indicates the presence of either C, A, T or G at that nucleotide position and in which "k" indicates the presence of either T or G at that nucleotide position.

<400> 12
ttgattggtt caggaatgga tnnkcggnnk gaaaacagtc cataccttnn kttcatctat 60

acatcattcc 70

<210> 13
<211> 30
<212> DNA
<213> Artificial

<220>
<221> misc_feature
<223> PCR primer

<400> 13
gcaaaagcca aaacggtacc atcaggatca 30